COURSE NAME: ARTIFICIAL INTELLIGENCE
COURSE CODE: CIS 412

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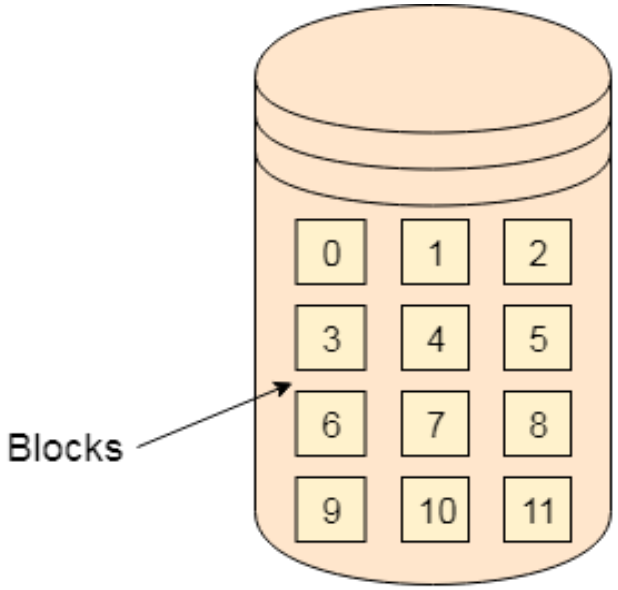
CONTIGUOUS

- Contiguous Memory Allocation: Contiguous memory allocation allocates consecutive blocks of memory to a file/process.



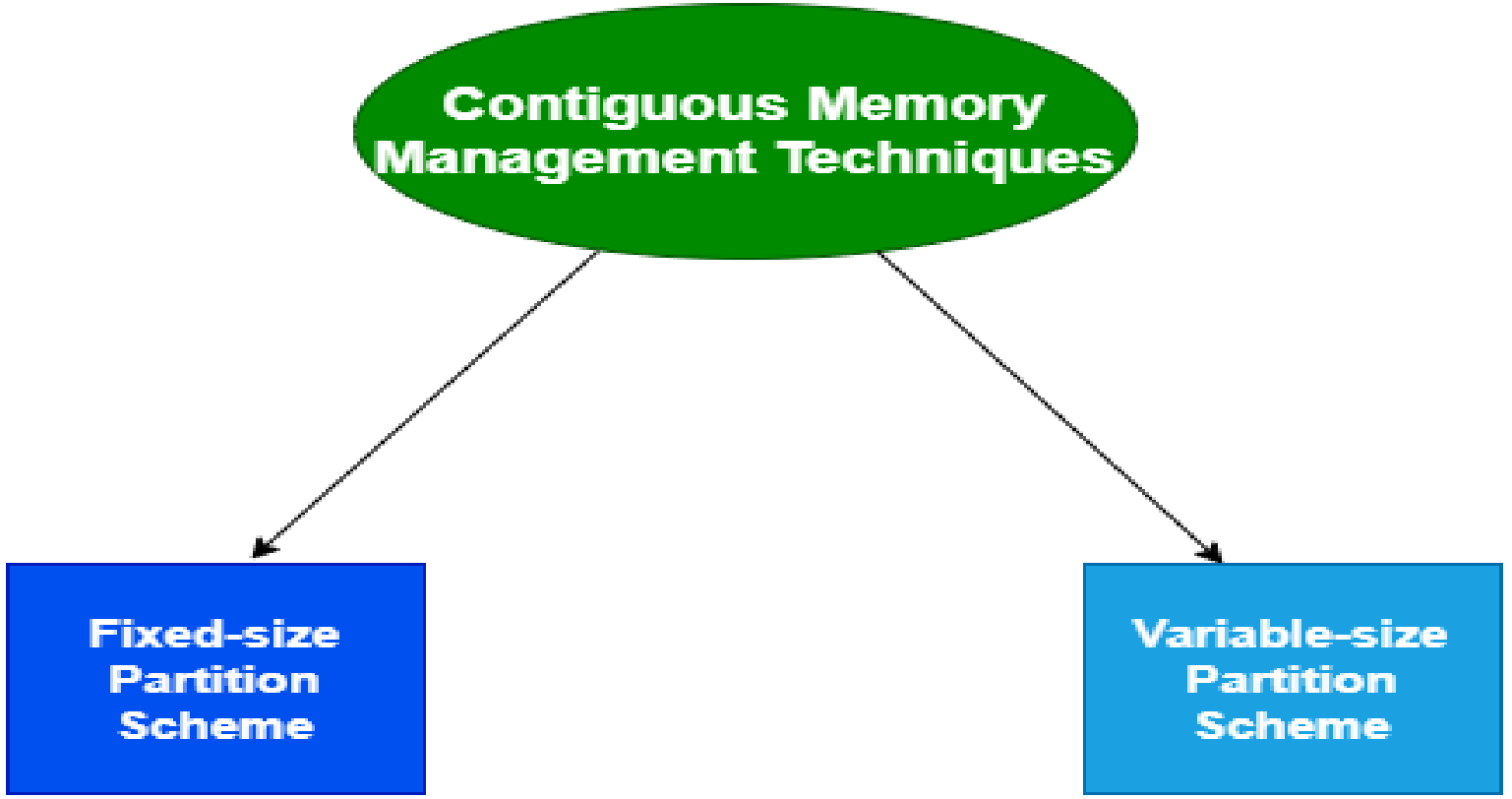
Hard Disk

File Name	Start	Length	Allocated Blocks
abc.text	0	3	0,1,2
video.mp4	4	2	4,5
jtp.docx	9	3	9,10,11

Directory

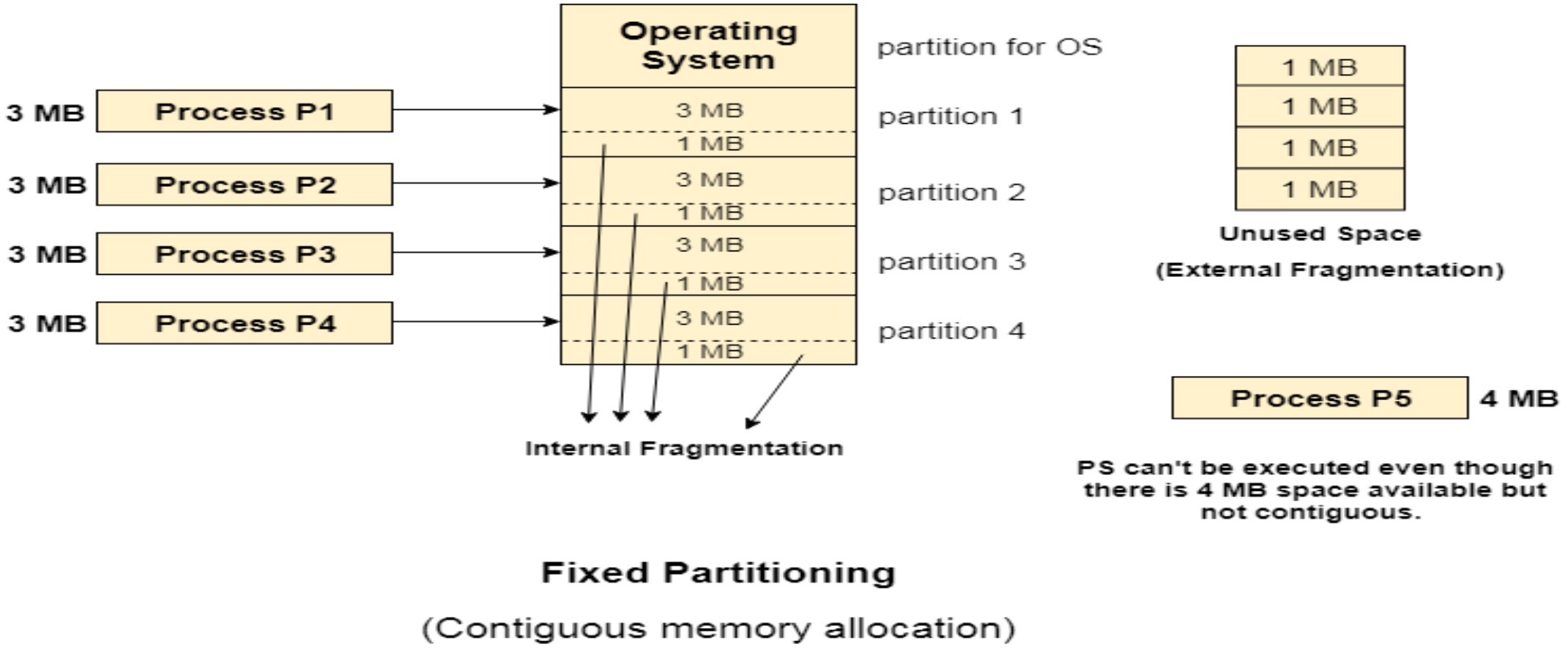
Contiguous Allocation

CONTIGUOUS

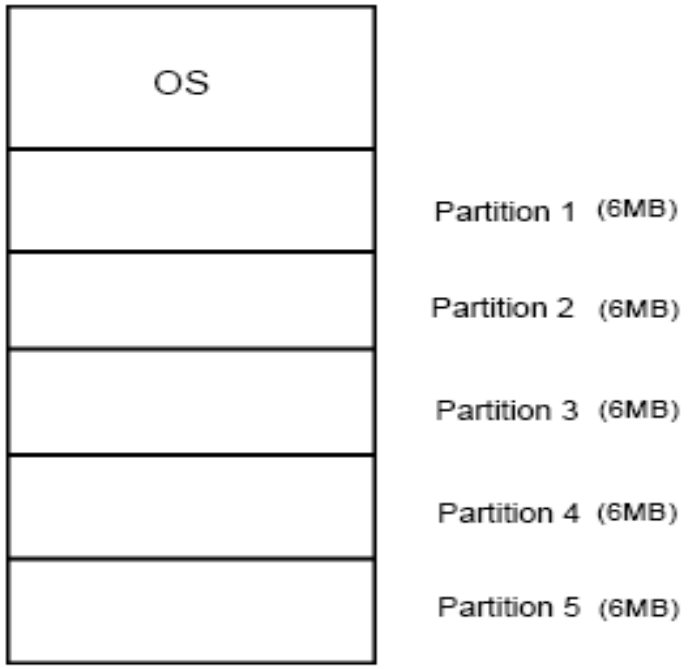

Contiguous Memory Management Techniques
Fixed-size Partition Scheme
Variable-size Partition Scheme

FIXED SIZE PARTITION

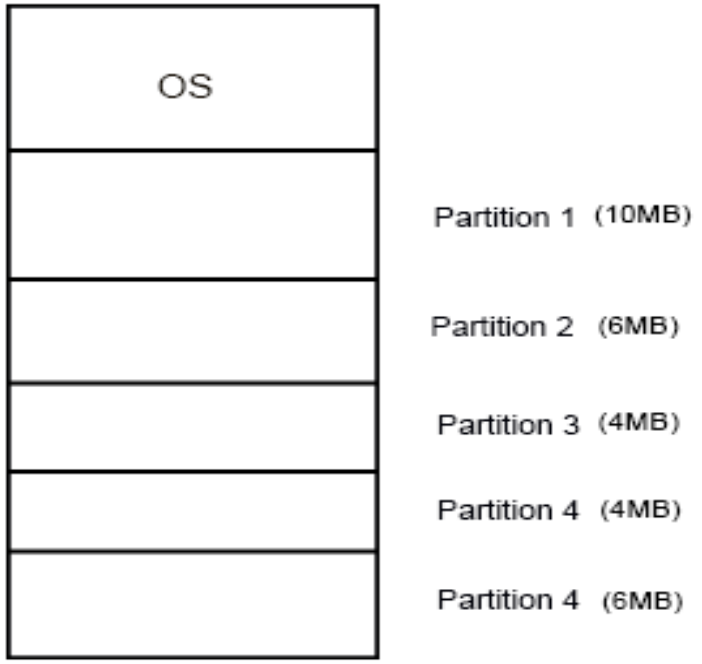
- **Fixed Size Partition (Static):** This is the oldest and simplest technique used to put more than one process in the main memory. In this partitioning, the number of partitions in RAM is fixed but the size of each partition may or may not be the same.



FIXED SIZE PARTITION



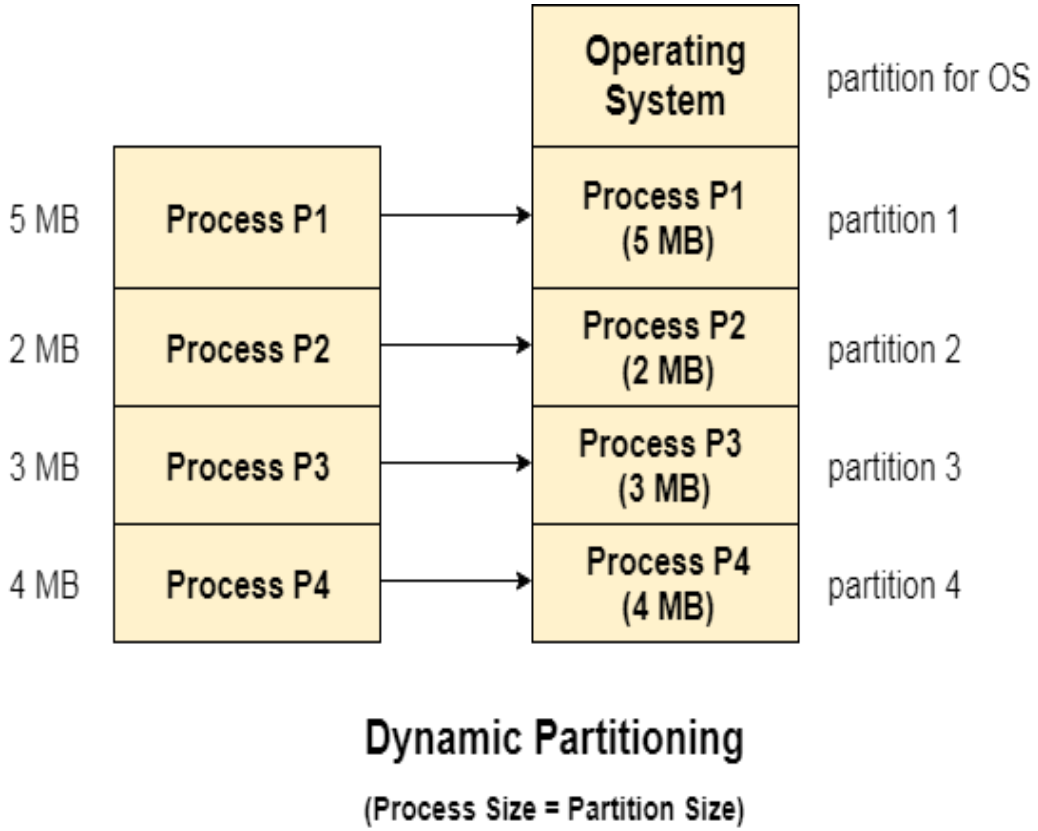
Equal Size Partitions



Unequal Size Partitions

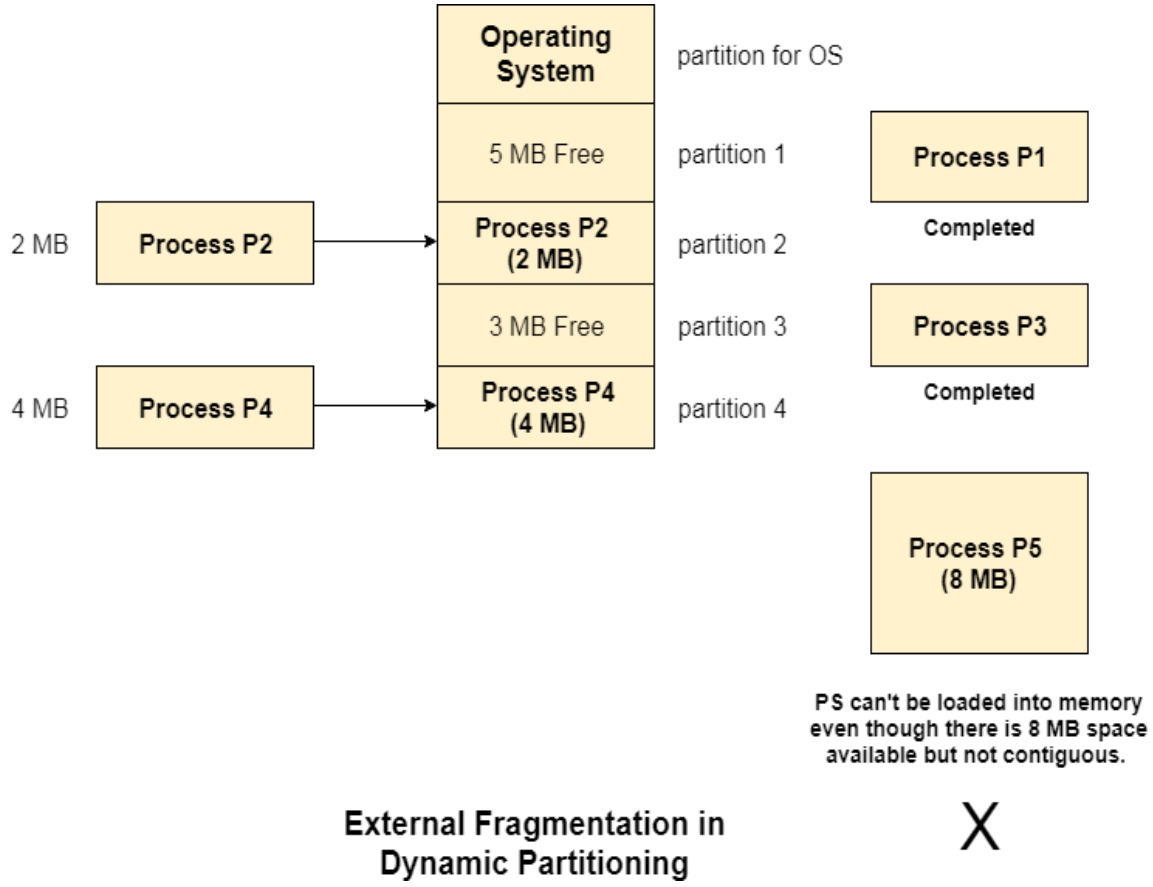
VARIABLE SIZE PARTITION

- **Variable Size Partition (Dynamic):** In Variable-sized memory partitioning, the main memory is divided into blocks of the same or different sizes. Variable-sized memory partitioning takes place at run time when a process asks for a block of the main memory.



Dynamic Partitioning

(Process Size = Partition Size)



External Fragmentation in Dynamic Partitioning

X

FIRST FIT

- **First Fit Memory Allocation:** In the first fit approach is to allocate the first free partition or hole large enough which can accommodate the process.

Job Number	Memory Requested
J1	20 K
J2	200 K
J3	500 K
J4	50 K

Memory location	Memory block size	Job number	Job size	Status	Internal fragmentation
10567	200 K	J1	20 K	Busy	180 K
30457	30 K			Free	30
300875	700 K	J2	200 K	Busy	500 K
809567	50 K	J4	50 K	Busy	None
Total available :	980 K	Total used :	270 K		710 K

BEST FIT

- **Best Fit Memory Allocation:** In this method, the Operating System first searches the whole of the memory according to the size of the given job and allocates it to the closest-fitting free partition in the memory, making it able to use memory efficiently.

Job Number	Memory Requested
J1	20 K
J2	200 K
J3	500 K
J4	50 K

Memory location	Memory block size	Job number	Job size	Status	Internal fragmentation
10567	30 K	J1	20 K	Busy	10 K
30457	50 K	J4	50 K	Busy	None
300875	200 K	J2	200 K	Busy	None
809567	700 K	J3	500 K	Busy	200 K
Total available :	980 K	Total used :	770 K		210 K

WORST FIT

- **Worst Fit Memory Allocation:** Worst Fit allocates a process to the partition which is largest sufficient among the freely available partitions available in the main memory.

Process Number	Process Size
P1	30K
P2	100K
P3	45K

MEMORY LOCATION	MEMORY BLOCK SIZE	PROCESS NUMBER	PROCESS SIZE	STATUS	INTERNAL FRAGMENTATION
12345	50K	P3	45K	Busy	5K
45871	100K	P2	100K	Busy	None
1245	400K	P1	30K	Busy	370K
TOTAL AVAILABLE:	550K	TOTAL USED:	175K		375K